

The station botanists at Washington.

The establishment of the experiment stations under the so-called "Hatch Act" has brought many botanists into lines of work that may run parallel in some respects, and therefore furnished the occasion for a union among these workers. Several of the station botanists were in attendance at the A. A. S. meeting at Toronto in August last, and one afternoon they found time to hold a meeting, with Dr. W. J. Beal in the chair, in which several station matters were considered. For example, the limitations for the several classes of station workers were discussed, and more particularly the topic: "What is the botanist's work in the station?" There are lines of work, as for instance the cross-fertilization of plants, that come quite naturally to either the skilled agriculturist, horticulturist or botanist, and must be decided by the circumstances of each particular case. The character of the station bulletin was considered, and the opinion generally prevailed that it should be founded upon observations and experiments made by the author, but should not exclude valuable matter elsewhere to be obtained. It was the sentiment of the meeting that collections should be made and exchanges encouraged, especially of specimens of plants most frequently referred to by station botanists. It was considered important that the station workers should meet at least once each year for conference, consultation, etc., and a committee was appointed to communicate with the director of the office of experiment stations upon this subject.

The following suggestions were sent by the committee:

"*Sir*: The undersigned have been appointed, at a meeting of the botanists of the experiment stations, a committee to call your attention to the desirability of urging upon officers of the stations that they send to the coming annual meeting of the association of colleges and experiment stations representatives of their working corps. We further wish to suggest that, in our opinion, such a gathering of the station workers would result in great good and that the stations might well defray all necessary expenses. May we not suggest that you urge this matter upon station officers?"

"CHARLES E. BESSEY,

"S. T. MAYNARD,

"T. J. BURRILL,

"Committee."

The following botanists were present: J. C. Arthur, W. J. Beal, C. E. Bessey, T. J. Burrill, F. V. Coville, B. E. Fernow, W. R. Lazenby, S. T. Maynard, Wm. Saunders, F. L. Scribner, B. M. Waite, C. E. Weed and the secretary, B. D. Halsted.

The Washington meeting of the Association of A. A. C. & E. S. was held on November 12-15, and several botanists were in attendance. Nothing of a botanical nature was provided for in the printed program of the convention, and there were objections raised as to the desirability of the association dividing into sections for special work, and it was not until near the close of the sessions that any provision was made for the holding of meetings of specialists. It was finally adopted that the association shall be divided into at least five committees as follows: Agriculture, Botany, Chemistry, Entomology and Horticulture. Previous to this, however, the botanists had held two meetings, making three in all. Several of the older botanists of the experiment stations, as, for example, the three B's, were unavoidably absent, the meeting coming at an unusually busy time of year.

Dr. Geo. Vasey was called to the chair and presided over the first two sessions of the botanists. After some routine work, the chairman presented a valuable paper upon the growth and future hopes of the Division of Botany of the U. S. Department of Agriculture. From a very small beginning, less than a quarter of a century ago, this division of the government service has increased in value and efficiency until now it is recognized as a great botanical center in our country, and especially so by the botanists of the experiment stations. Dr. Vasey called attention to the great need of works upon botany suitable to the territories and newer states, and stated that a small increase of his force would render it possible to supply the demand—a demand that is not likely to be met by private enterprise for a long time to come. A generous invitation was extended to the station botanists to avail themselves of the large opportunities for study offered by the Division of Botany.

After an interesting discussion upon topics suggested by Dr. Vasey's paper a committee was appointed to consider the relationship that exists between the Division of Botany and the station botanists, which committee drew up the following:

“The station botanists desire to express their hearty appreciation of the generous support afforded the Botanical

Division of the Department of Agriculture as is evidenced by the printing of the various bulletins of the division and the publication of a journal devoted to the special interests of botanists, and in view of the unequalled facilities afforded by the large amount of botanical material accumulated in the division available for the preparation of much needed monographs of important or difficult groups of plants, wish to urge upon the attention of the Secretary of Agriculture the desirability of prosecuting this special work and its early publication, both in the interest of botanical science and for the direct assistance of station botanists."—F. L. Scribner, S. M. Tracy and B. D. Halsted, committee. Professors Tracy, Coulter, Scribner and others urged the importance of both making the fullest use of the division and aiding in increasing its collections and usefulness.

A paper by Dr. Beal was next read by the secretary upon "The Province of the Botanist in the Experiment Station." The stations are new, and widely different views prevail as to the work a botanist should do. Some think the botanist, for example, should study the life-histories of parasitic fungi, but the testing of remedies belongs to the horticulturist. Others consider that the study of bacteria is most closely related to the work of the veterinarian. If the agriculturist is not able to distinguish among grasses in his experimental plots he should call in the assistance of the botanist. The botanist should cross or hybridize plants, improve grasses and other crops, and test remedies for fungus diseases. But above all, the staff of any station should work harmoniously, and this requires that plans of experiments should be submitted in detail to the whole station staff.

Dr. Coulter thought there was one of two things for the station authorities to do in securing a botanist: (1) If they know what they want done, then a man should be obtained that is a specialist in that work; or (2) if they do not, the wise way is to get a competent botanist and then let him select his work.

The question was raised: Should station botanists teach? There was a difference of opinion. Dr. Arthur, of Indiana, has a few of the more advanced botanical students in his laboratory, but the elementary instruction is done by a university professor who is not on the station staff. A paper from Dr. Bessey was closely related to the point under discussion and was read at this time. It favored the close connection of the station and the university for various reasons, but chiefly

because this arrangement was mutually helpful. Students when advanced can do some of the station work, under guidance, and thus increase the mass of facts desired by the station, while at the same time learning how to investigate. Dr. Bessey has been able to obtain much good work for bulletins in this way. The opinion prevailed that the station worker should not be burdened with large elementary classes, but a few advanced laboratory students are an advantage, especially if there are no regular assistants.

A paper was next presented by Prof. McCarthy upon seed-testing, giving results of extended experiments in this direction, accompanied by an explanation of a seed-testing pan placed on exhibition. Prof. Chester reported upon tests of seeds he had made, and was convinced that this line of work had been much neglected. Good-looking sorghum seed, for example, proved worthless, and much of the tested grass seed contained only twenty-five per cent. of good seed. Professor Scribner thought that seed-testing in itself was not proper work for the station botanist. Dr. Arthur stated that in his opinion we do not need seed-control stations in this country. Prof. McCarthy offered the following resolution: "That the chair appoint a committee of three to consider and recommend a uniform method of testing seeds and recording results." Professors Arthur, McCarthy and Chester constitute said committee, to report at the next annual meeting.

The balance of the time was occupied in individual reports of work done during the past year. Professor Galloway presented a report of the advances made in his section of vegetable pathology:

The work of the section is divided into two branches, namely: laboratory investigations and field experiments. After a subject is investigated in the laboratory, special agents in different parts of the country are selected to conduct experiments in treatment, these to be based upon the result of the laboratory work. During the present season agents have conducted field work in New Jersey, Virginia, Maryland, South Carolina, Georgia, Mississippi, Arkansas, Missouri, Wisconsin, Michigan, California; and the principal maladies under treatment were black-rot, downy mildew and anthracnose of the grape; powdery mildew, scab, rust and bitter-rot of the apple; potato-blight and rot; pear leaf-blight; quince leaf-blight; and strawberry leaf-blight, or rust, as it is more commonly called. Concerning black-rot, the result of the season's work has shown that the Bordeaux

mixture, containing from six to eight pounds of copper sulphate and from four to six pounds of lime, is the most reliable remedy. The ammoniacal carbonate of copper solution, however, promises to be fully as valuable as the last. It, moreover, is cheaper and can be applied with any ordinary nozzle. Downy mildew can easily be controlled by any of the copper remedies, the ammoniacal solution being the best under all circumstances. The experiments showed that anthracnose will develop despite the application of copper remedies. Powdery mildew of the apple has been treated with excellent results, the preparation used for this purpose being the ammoniacal carbonate solution. This experiment was carried on under Prof. Galloway's own supervision at nurseries near Baltimore, 300,000 apple seedlings being treated. Treatment of pear leaf-blight (*Entomosporium*) was made in the same nurseries, also in New Jersey, the results being highly satisfactory. The experiments in the treatment of apple scab were conducted by Professors Goff, of Wisconsin, and Taft, of Michigan. Early in the spring a plan of the work was drawn up and sent to both these men. Both carried on practically the same, but entirely independent, experiments, and both arrived at the same results, namely, that the scab could be controlled by any of the fungicides used; but all things considered the ammoniacal carbonate of copper solution was the cheapest, most practical and efficacious.

Other botanists spoke of their work very briefly, but the lateness of the hour made it necessary to bring the exercises to a summary close. It was voted that during the coming year a station botanists' bulletin be prepared, in which each botanist should outline the work already done or in progress, and thus facilitate coöperation whenever it is desired. Professors Halsted, Scribner and Galloway were made such a committee, after which the Botanical Committee of the Association of American Agricultural Colleges and Experiment Stations (a long name, by the way), with Professor S. M. Tracy in the chair, adjourned.

BYRON D. HALSTED, *Secretary*.